Installation, Operation & Maintenance – K-Conveyor Pulleys

Kinder Australia product:	K-Conveyor Pulleys
Product category:	Conveyor Pulleys & Lagging
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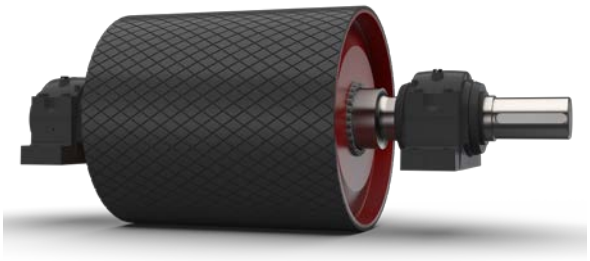
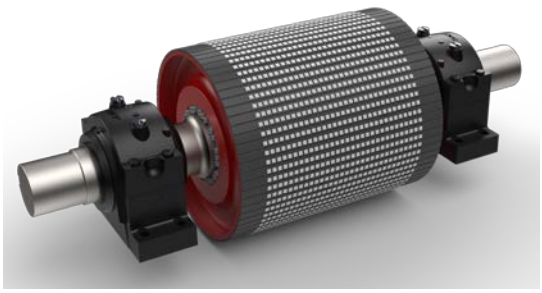
OVERVIEW:

K-Conveyor Pulleys are specially designed for use on bulk product belt conveyors. Pulleys can be engineered and constructed to suit your specific application. The shells are normally made from heavy wall pipe but can also be rolled to suit specific requirements. Stainless steel pulleys are also available. Lagging can be applied to the shell to increase friction and reduce slippage, with options including rubber, ceramic or Polyurethane lagging, both smooth and grooved. Shaft is usually made from high-strength steel 1045, 4140 or as requested. High-quality advanced locking mechanisms and bearing designs facilitate easy installation, removal, and maintenance.





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CONVEYOR PULLEY INSTALLATION PROCEDURE:

Checks Prior To Installation

1. Check to see if pulley shell is central between bearings.

2. Verify that the structure mounting holes match the pulley shaft support mount centres.

3. Check that lagging (if fitted) is not damaged. For drive pulleys with grooved herringbone lagging, ensure the lagging is correctly installed with the vee pointing in the direction of belt travel.

4. Check all bolts, keys (if fitted) are secure.

If any faults are identified during these checks, they must be corrected before installing the pulley.

Adjustments can be made to the live shaft pulley assembly by releasing the bearing or locking elements on the shaft and relocating it. Ensure correct reassembly of the bearing in the housing, locking elements are sealed with covers, maintaining proper clearances.

****Warning: ** NEVER OPERATE, ADJUST, OR INSTALL EQUIPMENT ON A MOVING CONVEYOR!**

Before beginning installation or maintenance of any conveyor components, ensure the conveyor is isolated, locked, and danger tagged at the main positive isolator per occupational health and safety regulations to prevent unauthorised starting.

Installation

Pre-Check:

1. Inspect all pulleys and associated components for visible damage or defects.

2. Confirm that pulley dimensions match the specifications.

3. Ensure shafts and bearings are correctly aligned.

4. Lubricate moving parts as per manufacturer specifications.

5. Lagged pulleys are sometimes supplied with protective wrapping around the shell. **DO NOT REMOVE** until after assembly to the structure. Some installers choose to leave protective wrapping on until belt is pulled on also.

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Lifting:

1. Lifting of the pulley assembly is typically accomplished by cradling with nylon type straps. **(Figure 1)**

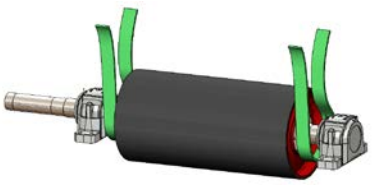
Use of wire rope or chain is not recommended due to potential damage.

2. Ensure rigging does not contact bearing housings or seals due to potential bearing or shaft damage. **(Figure 2)**

3. Assemblies on skids or cradles may be lifted with fork trucks. Fork truck tines shall extend completely through the skid or cradle and care should be taken to avoid lagging damage.

Figure 1

Figure 2



Alignment:

When assembling the pulley to the structure the pulley must be:

1. Central about the conveyor centre line.

2. Horizontal and level across the pulley face.

3. The axis of the shaft **MUST BE** at 90 degrees to the conveyor centre line.

NOTE: Drive pulleys with grooved herringbone lagging must be installed with the lagging pointing in the direction of the belt travel.

Securing:

After installation it is recommended that the bearing housing or shaft support bracket be locked into position by dowelling, or other approved method, to prevent any movement when the belt tensions are applied.

Final Inspection:

1. Remove protective coverings.

2. Ensure bearings and seals operate smoothly.

3. Apply a long-life anti-corrosive protective to exposed surfaces.

4. Touch up damaged paint surfaces and apply anti-corrosive coating to exposed shafting.

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CONVEYOR PULLEY OPERATION PROCEDURE:

Pre-Operation Checks

Before operating the conveyor system, perform the following checks:

Visual Inspection:

1. Inspect the pulley and surrounding components for any visible damage or wear.

2. Ensure that all bolts, keys, and locking mechanisms are secure.

3. Check the condition of the lagging on the pulley. Ensure it is intact and properly installed.

Alignment Check:

1. Verify that the pulley is correctly aligned with the conveyor system.

2. Ensure that the shaft and bearings are properly aligned and secure.

Lubrication:

1. Check that all bearings and moving parts are properly lubricated according to manufacturer's specifications.

2. Ensure that the grease system fittings are accessible and operational.

Safety Precautions:

1. Confirm that all safety guards and covers are in place.

2. Verify that emergency stop mechanisms are functional and accessible.

3. Ensure that the area around the conveyor is clear of any obstructions or personnel.

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Startup Procedure

Initial Preparations:

1. Make sure the conveyor system is isolated from the main power supply and tagged out to prevent accidental startup.

2. Notify all relevant personnel of the intention to start the conveyor system.

Power Up:

1. Reconnect the conveyor system to the main power supply.

2. Remove all isolation locks and tags in accordance with safety protocols.

Initial Run:

1. Start the conveyor system at a low speed to check for any abnormal sounds or vibrations.

2. Observe the pulley and belt for proper alignment and tracking.

3. Gradually increase the speed to the desired operational level, monitoring the system for any issues.

Load Application:

1. Once the conveyor system is running smoothly, begin applying the load incrementally.

2. Ensure that the load is distributed evenly across the belt to avoid imbalances.

Normal Operation

Monitoring:

1. Continuously monitor the conveyor system during operation for any signs of abnormal performance, such as unusual noises, vibrations, or misalignment.

2. Regularly check the tension and tracking of the conveyor belt.

Routine Inspections:

1. Perform regular inspections of the pulley, bearings, and other critical components.

2. Ensure that the lubrication schedule is followed, replenishing grease as needed.

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Safety Checks:

1. Periodically check that all safety mechanisms are functioning correctly.

2. Ensure that the area around the conveyor remains clear of obstructions and unauthorized personnel.

Shutdown Procedure

Load Removal:

Gradually reduce the load on the conveyor system before initiating shutdown procedures.

Power Down:

1. Reduce the conveyor speed to a minimum before stopping the system.

2. Disconnect the conveyor system from the main power supply and apply lockout/tagout devices.

Post-Operation Inspection:

1. Conduct a thorough inspection of the pulley, belt, and bearings for any signs of wear or damage.

2. Ensure that all components are in good condition for the next operational cycle.

Cleaning and Maintenance:

1. Clean any debris or material build-up from the pulley and surrounding components.

2. Perform any necessary maintenance tasks, such as lubrication or part replacements, as indicated by the inspection.

Safety Considerations

1. Always adhere to all relevant occupational health and safety regulations when operating the conveyor system.

2. Use appropriate personal protective equipment (PPE) during all operational and maintenance procedures.

3. Ensure all personnel are trained and aware of the safety protocols associated with the conveyor system.

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CONVEYOR PULLEY MAINTENANCE:

Safety Considerations

1. Always adhere to all relevant occupational health and safety regulations during maintenance.

2. Use appropriate personal protective equipment (PPE) when performing maintenance tasks.

3. Ensure the conveyor system is isolated, locked out, and tagged out before performing any maintenance to prevent accidental startup.

Routine Maintenance

Daily Checks

1. Visual Inspection: Inspect the pulley and surrounding components for visible damage or wear. Check for signs of misalignment or unusual noise. Ensure there is no build-up of material on the pulley or belt.

2. Belt Tracking: Verify that the conveyor belt is tracking correctly and making proper contact with the pulley. Adjust belt tension and tracking as necessary.

Weekly Checks

1. Lubrication: Check lubrication levels in all bearings and add grease as needed. Ensure that grease fittings are clean and accessible. Use high-quality Lithium Complex based mineral oil grease, such as Shell Gadus S2 V100 2.

2. Component Security: Ensure all bolts, keys, and locking mechanisms are tight and secure. Check the condition of the lagging for signs of wear or damage.

Monthly Checks

1. Alignment: Check the alignment of the pulley with the conveyor system. Ensure the shaft and bearings are properly aligned and secure.

2. Detailed Inspection: Perform a more detailed inspection of all components, looking for wear, cracks, or other signs of damage. Check the condition of the protective coatings on the pulley and reapply as necessary.

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Annual Checks

1. Bearing Inspection: Inspect bearings for smooth operation and signs of wear. Remove, clean, and re-grease bearings as per manufacturer specifications. Replace bearings if there are any signs of brinelling, excessive wear, or damage.

2. Protective Coating: Inspect and maintain the anti-corrosive protective coating on all exposed surfaces. Reapply anti-corrosive coatings to exposed shafting and other metal parts as necessary.

3. Comprehensive System Check: Conduct a comprehensive inspection of the entire conveyor system, including pulleys, belts, and support structures. Ensure that all components are in good working condition and make any necessary repairs or replacements.

Lubrication Procedure

Grease Selection:

1. Use a high-quality Lithium Complex based mineral oil grease, such as Shell Gadus S2 V100 2.

2. Ensure that the grease is compatible with the specific application and environmental conditions.

Lubrication Intervals:

1. Follow the lubrication schedule provided by the manufacturer. In this Case Refer to

(Appendix B)

2. You can also use the SKF Lubrication Planner application to determine the appropriate relubrication interval and grease quantity.

Application:

1. Apply grease to the bearings via grease fittings until fresh grease exudes from the seals.

2. Ensure that all moving parts are properly lubricated to reduce friction and wear.

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TROUBLESHOOTING

Noise and Vibration:

- Check for misalignment, worn bearings, or loose components.

- Ensure that the pulley is properly secured and aligned with the conveyor system.

Belt Tracking Issues:

- Adjust the alignment and tension of the belt to ensure proper tracking.

- Inspect the pulley for uneven wear or damage to the lagging.

Overheating:

- Verify that the bearings are properly lubricated.

- Check for excessive load conditions and reduce load if necessary.

- Ensure adequate ventilation around the conveyor system.

Lagging Wear:

- Inspect the condition of the lagging regularly.

- Replace lagging if it shows signs of significant wear or damage.

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STORAGE INSTRUCTIONS

Storage Conditions:

If the pulley is not to be installed on delivery, careful storage must be undertaken to ensure the assembly is not degraded.
1. Pulleys should be stored protected from the elements.
2. Rubber lagged pulleys should not be stored in direct sunlight or enclosed with operating electrical equipment, large temperature, or humidity variations from normal conditions. Deterioration may result if oil, grease, Kerosene, solvents, or other chemicals are allowed to remain on the lagging.

3. Apply additional coatings of rust preventatives if long-term storage is required. Remove rust preventatives before installation.

4. Pulleys with roller or ball bearings should be isolated from ANY vibration. Storage in machinery rooms or on concrete slabs, which extend into vibrating areas, will lead to brinelling of the bearings and early failure in service.

5. Pulleys are assembled with roller or ball bearings, allowing the bearing to rotate freely. Frequently rotating the bearing to minimizes the risk of brinelling.

6. Bearing housings to be stored with 100% grease fill. As standard, pulleys supplied with bearings fitted are greased ready for operation. Additional grease will need to be added to the bearings of these pulleys prior to storage.
Bearing can be supplied ready for storage upon requested. All pulleys supplied with bearings that are ready for storage will be tagged as such.
Grease must be purged and refilled according to the initial grease fill recommendations on **(Appendix B)** before operation.

Inspection:

Pulleys should be inspected at least annually to ensure the bearings remain charged with sufficient grease, that the lagging remains in good condition and that the protective coating is also in good condition.
Any evidence of grease discharge from the bearings should be investigated and remedied.
Replace / repair protective coating as required.

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MOUNTING BEARING HOUSINGS WITH TACONITE SEALS

Refer to the appendixes below:

Appendix C

Appendix D

Appendix E

SKF Lubrication Planner application which can be downloaded from
https://www.skf.com/au/knowledge-centre/engineering-tools/skflubricationplanner.html

APPENDICES

Appendix A: Locking Element Torque Specifications

Appendix B: Lubrication Schedule

Appendix C: SKF Bearing Mounting Instruction.

Appendix D: SKF Bearing Mounting Instruction for SNL Housing with Taconite Seals

Appendix E: SKF Bearing Mounting Instruction for SDVD housing.

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